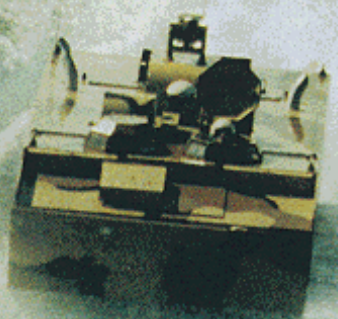
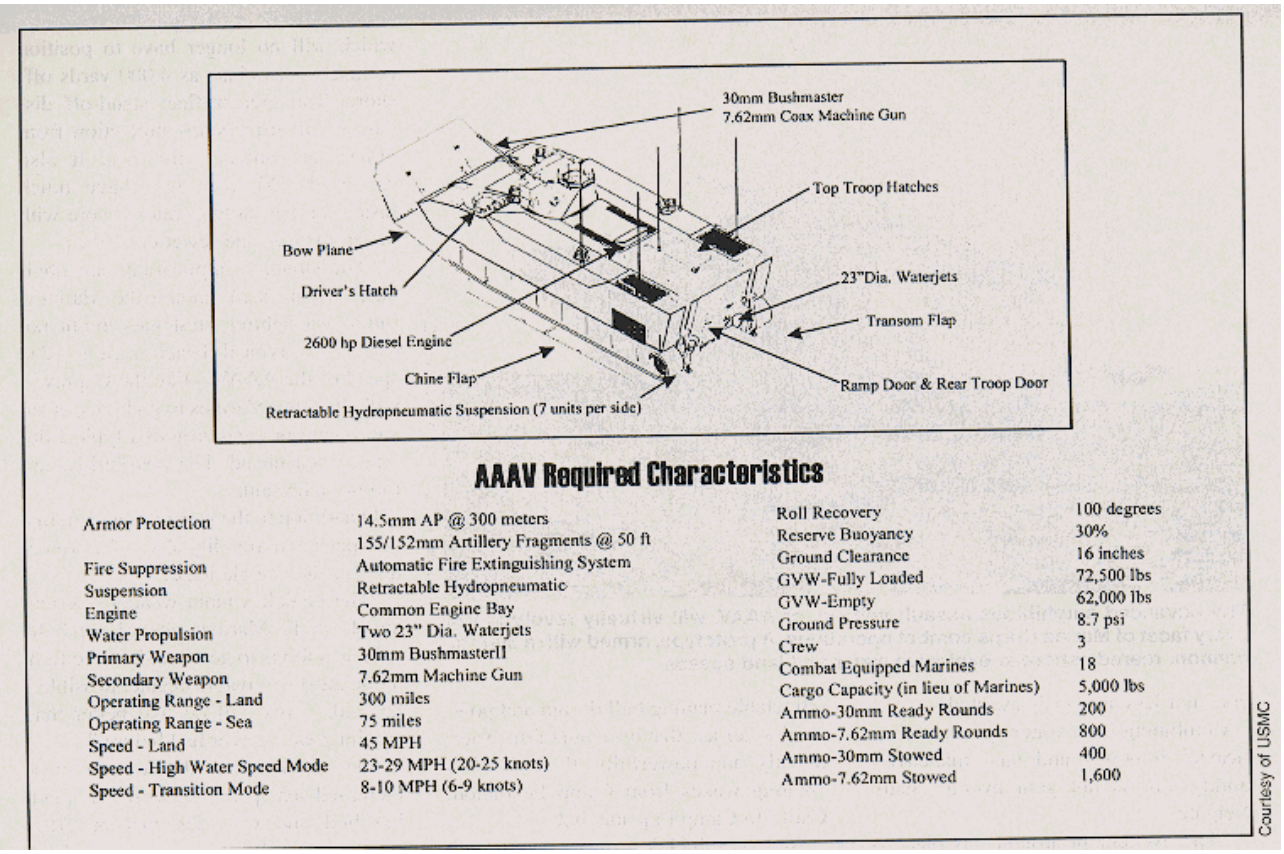
January 1998

$3.00

LEATHERNECK

MAGAZINE OF THE MARINES





The AAAV

While not nearly as far along the development and procurement road as the Osprey, the AAAV is no less important to Marine strategists and warfighters-nor less anxiously awaited. Combining high water speed, sophisticated firepower and land maneuverability, this is not your average gator freighter.

"The excitement around this place is incredible," Maj Moore said during a recent tour of the General Dynamics facility where the AAAV is being developed. Moore and other Marines share the massive office and industrial complex with the civilian contractors.

After nearly nine years of concept validations and bureaucratic procurement processes, the Corps recently awarded General Dynamics the contract to build more than 1,000 of the triple-AVs which will begin reaching the fleet in 2004. The entire fielding is expected to be complete in 2012.

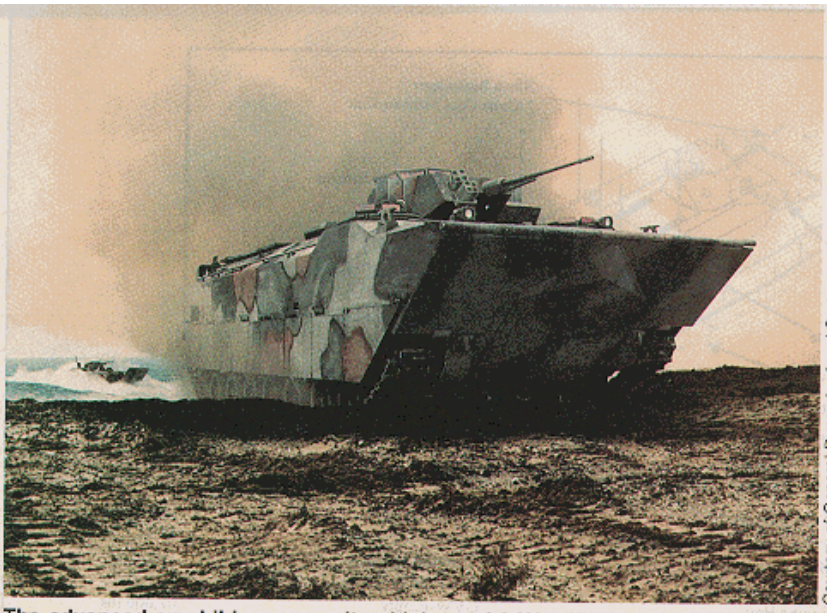
While it will be seven years before low-rate initial production begins, the AAAV is already causing splashes around the fleet. A hydrodynamic testing-basically a scaled-down water version of the vehicle-blasted all known sea speed records when it achieved a sustained speed of 25 knots, or 29 mph, more than three times that of the

current amphibian tractor. Utilizing a unique, retractable planing hull design and powerful water jets that lift it out of the water quickly and powerfully, the AAAV is creating wakes from Camp Pendleton, Calif., to Camp Lejeune, N.C.

And the vehicle's prowess doesn't end at the beach. The automotive test rig-a version designed to prove the system's engines and drive-train capabilities reached speeds overland of more than 45 mph, equal to or greater than an M- I A I tank.

Finished vehicles will be armed with a 30-mm. cannon mounted in a turret featuring sophisticated fire control and sighting systems, and more. It will also have twice the armored protection of the current AAV.

Gen Krulak is convinced the AAAV will be a cornerstone of future amphibious warfare.



Courtesy of General Dynamics Land Systems

The advanced amphibious assault vehicle, or AAAV, will virtually revolutionize every facet of Marine Corps combat operations. A prototype, armed with a 30-mm. cannon, roared ashore at explosive water and land speeds.

"The AAAV will virtually revolutionize every facet of Marine Corps combat operations," Gen Krulak said in a recent speech. "It is one of the most capable all-around weapons systems in the world."

Like the Osprey, the AAAV's speed and mobility will be the key to its revolutionary success. The incredible sea speeds mean the AAAV can be launched from amphibious ships over the horizon at distances of up to 25 miles. That equals better survivability for both the Marines in the vehicle and the Navy ships which will no longer have to position themselves as close as 4,000 yards off shore. The greater fleet stand-off distances will offer ships protection from mines and antiship missiles. It also means the Marines will have much faster combat buildup rates ashore with lower attrition and fewer casualties.

"The strategic implications are obvious," Moore said, adding the Marines' future warfighting strategies might not call for a typical beach assault. The speed of the AAAV-like the Osprey-will allow the Marines to go in dispersed and inland or even around a typical defended beachhead. The possibilities are limitless, he said. In addition to the warfighting benefits, the speed and mobility also offer protection for the vehicle itself. "The vehicle's main weapons system are those 17 Marines aboard. And the vehicle's job is to get them into the fight in the most survivable manner possible," he said. "This will do that better than anything we've ever had before."

The AAAV will be able to reach those increased sea speeds by using the planing hull and water-jet concept. After studying the Corps' requirements, General Dynamics officials said they designed the aluminum alloy hull with deployable planing appendages, retractable track and suspension, and advanced modular armor. The AAAV's diesel engine provides 2,600 horsepower for seaborne operations, 800 horses ashore.

But it's the planing hull concept which will vastly improve performance over current amtracs. The planing appendages in the front and rear of the vehicle drop down to provide a smooth, flat surface on which the vehicle can ride.

"The propulsion is incredible," Moore said. Once ashore, the AAAV will rapidly be able to transition from water-to-land mode more quickly than its predecessors. The vehicle automatically transfers engine power from the water jets to the vehicle's tracks as needed, utilizing computer-assisted technology.

Ongoing design and testing reviews will determine what type of track the vehicle will use. Suspension, however, will be controlled by 14 suspension units featuring internal pistons, track tension adjusters and automatic height control. Twenty-eight road wheels will assure the required maneuver performance.

The AAAV will also pack a bigger combat punch than the current amtrac. Marines know that, in battle, identifying and acquiring targets quickly and effectively is a matter of life or death. To that end, officials have installed a two-man stabilized turret system on the AAAV which will provide better situation awareness and battlefield surveillance.

The 30-mm. Bushmaster chain gun and a coaxial M240 7.62-mm. machine gun are activated inside the vehicle' turret station which features a full-solution fire control system and laser range finder. Sighting systems also include daylight optics, thermal imaging sensor and a second-generation forward looking, infrared system, or FLIR.

The vehicle's aluminum hull is also armored, utilizing ceramic tiles and a Kevlar liner. The combination of armor and aluminum, officials assert, effectively shields the vehicle

against mines defeats multiple projectile impacts as well as offering twice the protection of today's AAV7A1. And officials are not forgetting the creature comforts.

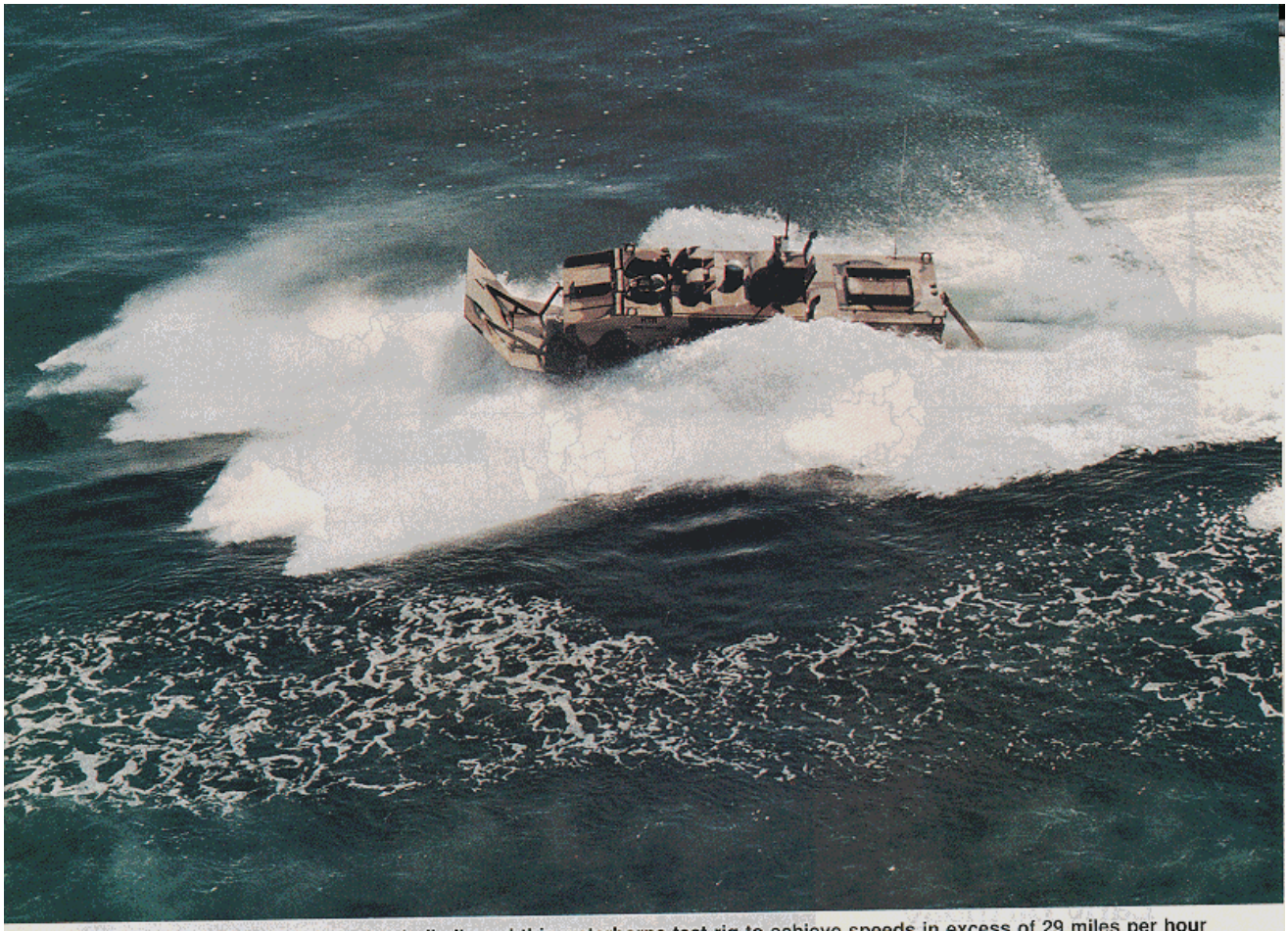
"We took all of the engineers to Norfolk [Va.] to take a ride in a current amtrac, to get a feel for what Marines have to put up with," Moore said. "We wanted them to discover for themselves what it's like to breathe diesel fumes, smell the exhaust and feet the water dripping down all around them." The goal of that exercise: to ensure that designers keep the needs of the vehicle passengers in mind as they design the AAAV for future leathernecks.

"We know we have a lot of smart people who know how to make all this stuff work, but what they don't necessarily know is how to employ it in the field. We're making sure they remember the Marines who will have to use it."

To help in that effort, teams of infantry and amtrac Marines assigned to Marine Corps Base, Quantico, Va., have been making routine trips to the Woodbridge facility to help the designers in their quest to create the most user-friendly battle weapon to date. The Marines offer suggestions on everything from hand-hold and seating configurations, to how the joystick for the weapon station should be designed.

"They've made a real contribution to the project," Moore said of the Quantico Marines.

While it will be several years before the Marines bring the Osprey and AAAV to any future fight, rest assured the future is within sight. And once again, the Marines are at the forefront of new and innovative technology.



An innovative, retractable planing hull allowed this waterborne test rig to achieve speeds in excess of 29 miles per hour (25 knots), more than three times faster than the speed of current amtracs. On land, the AAAV can travel up to 45 miles per hour. (Photo courtesy of General Dynamics Land Systems)

Leatherneck - January 1998